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Groin Infection Due to Inguinal Hematoma Necessitating Surgical Debridement: A Rare Complication of Percutaneous Coronary Intervention

İnguinal Hematoma Bağlı Cerrahi Debridman Gerektiren Yara Yeri İnfeksiyonu: Perkütan Koroner Girişimin Nadir Bir Komplikasyonu

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Abstract
A 63 year old obese female with chronic renal failure and type 2 diabetes mellitus underwent angioplasty and stent implantation. A large femoral hematoma 10x7 cm in diameter appeared after 10 minutes, and the sheath was withdrawn immediately without waiting heparin effect to subside. Skin erosion and subsequent open wound developed due to the disruption of vessel supply at the fifth day. Despite the early initiation of antibiotics, the wound progressed deeper; hence, surgical debridement was performed at the 15th day. During the follow-up, the wound tissue became healthy with better perfusion and was sutured with no other complication. We think that drainage may provide tissue perfusion by maintaining better blood supply, in case of large hematoma at the puncture site. Radial artery puncture may be preferable in older and obese patients.
Key Words: Groin infection, Percutaneous coronary intervention, Inguinal hematoma.

Özet
Altmış üç yaşında tip 2 diabetes mellitus ve kronik böbrek yetmezliği olan bayan hastaya anjiyoplasti ve stent uygulandı. İşlemden yaklaşık 10 dakika sonra femoral bölgede 10x7 cm'lik büyük bir hematom gelişti. Vasküler kılıf, heparin etkisinin geçmesi beklenmeden çekildi. Cilt ve cilt altı dokusunun beslenmesinin bozulmasına bağlı olarak 5. günde ciltte erozyon ve ardından açık ayara oluştu. Erken dönemde antibiyotik başlanmış olmasına rağmen yara giderek derinleşti ve bu nedenle 15. günde cerrahi debridman yapıldı. Takipte yara bölgesinin perfüzyonu düzeldi ve açıklık suture edildi. Hastada başka bir komplikasyon gelişmedi. Girişim yerinde büyük hematom oluşmuşsa kendiliğinden resorbe olmasını beklemek yerine drenaj yapmanın kanlanmayı düzelterek yara enfeksiyonu riskini azaltacağı kanaatindeyiz. Yaşlı ve obes hastalarda radial girişimler tercih edilebilir.
Anahtar Kelimeler: Yara enfeksiyonu, Perkütan koroner girişim, İnguinal hematom.

Introduction

The number of diagnostic and interventional cardiac invasive procedures is increasing steadily (1). The incidence of complications associated with these procedures varies between 1.5-9%, according to type of the procedure (2). Local hematoma formation is a minor complication which causes a decrease in the hemoglobin levels more than 2 g/dl 24-48 hours after the intervention; need for blood transfusion, aneurysm, pseudoaneurysm and arteriovenous fistula formation are major complications (1). Small hematomas at the femoral puncture site are relatively common, readily diagnosed and generally not significant. However, sometimes retroperitoneal bleeding can be serious and life threatening clinical condition (3-6). Superficial femoral hematomas tend to resorb spontaneously but occasionally unexpected results may happen.

In this case report, secondary infection and abscess formation, a rare and life threatening complication of large femoral hematomas and potential measures to prevent this complication will be presented.

Case Report

A 63 year old female patient was admitted to our clinic by the complaints of dyspnea and chest pain. She had a history of hypertension, type-2 diabetes mellitus (DM-II) and chronic renal failure with hemodialysis treatment 3 times in a week. Calculated body mass index was 34 kg/m^2. ECG revealed negative T waves on anterior leads. Her white blood cell count was mildly elevated at admission (10,500/mm^3), peaked to 29,600/mm^3 during follow-up and decreased to normal levels (8,600 /mm^3) at discharge. Maximum CRP was 11.7 mg/dl. Coronary angiography, performed for suspected coronary artery disease, revealed severe multivessel disease. Coronary artery bypass graft surgery was recommended but the patient refused surgery. Coronary angiography was reviewed by interventional cardiologists and percutaneous coronary intervention (PCI) to LAD was planned. Clopidogrel 75 mg/day was added to 300 mg/day acetylsalicylic acid. One week later, the patient was admitted to angiography unit for PCI. Due to mild ecchymosis and small hematoma in the right groin, left femoral artery was punctured. During PCI a 2.75x30 mm paclitaxel

eluting stent was implanted successfully without complication. A large femoral hematoma was observed 10 minutes after the procedure and the sheath was withdrawn immediately without waiting heparin effect to subside. Hematoma expanded and hemoglobin values descended from 12.9 g/dl to 8.1 g/dl, necessitating four units of erythrocyte suspension. Superficial ultrasonography revealed a large hematoma 7x10 mm in diameter, without evidence of pseudoaneurysm. The patient was consulted to infectious diseases due to mild superficial erosion of the region and ceftriaxone 2 g/after every hemodialysis was initiated. By the fifth day, the erosion enlarged, forming a deep open wound including subcutaneous and muscle tissue (Figure 1).

Figure 1. Groin infection due to inguinal hematoma. By the fifth day, the erosion enlarged, forming a deep open wound including subcutaneous and muscle tissue.

Upon reconsultation to infectious diseases, vancomycin 500 mg bid was added to treatment. The patient was also seen by plastic surgeon, and the surgeon recommended follow up initially but had to perform debridement due to malodorous drainage at the 15th day. Imipenem 250 mg qid was started. Wound swab culture revealed extended spectrum beta-lactamase-producing *E. coli*.

The patient was reevaluated by plastic surgery at the 22th day of hospitalization; the wound seemed healthy with better perfusion (Figure 2) and was sutured with no complication afterwards.

Discussion

Femoral hematoma is a common complication of invasive cardiac procedures (7). Wound infection is reported to be less than 1% after femoral artery catheterization (8). Deep wound infection at the hematoma site, with aggressive pattern requiring surgical drainage is very rare. Most of the infections reported in the current literature are associated with percutaneous closure devices. Sari et al. (9) reported a similar case with deep wound infection in the femoral region after PCI without using closure device. However, this patient improved by antibiotic therapy alone not necessitating surgical debridement.

Figure 2. A view of healing wound after surgical debridement. On the 15th day, plastic surgeon performed debridement due to malodorous drainage and no sign of improvement.

Hematoma of the femoral region is the most important risk factor for wound infection after cardiac catheterization (4). Hematoma provides a suitable nutritional environment for the bacterium (10). Hyperglycemia, hyperlipidemia, acidosis and cellular disorders or long term complications of diabetes impair the defense mechanisms of the patient. Diabetes by this aspect can be described as an immune deficiency disorder (11).

We think that the leading cause of infection in our case was impaired perfusion of the cutaneous and subcutaneous tissues, as a result of compression of the large femoral hematoma. DM and chronic renal failure also predisposes to infection. Even though we anticipated an infective complication and commenced antibiotics at the initial, we could not prevent wound infection invading deep subcutaneous and muscle tissue. When invasive interventions are planned for obese patients with concomitant diabetes and chronic renal failure, radial artery puncture may be preferable. If femoral artery is used, using percutaneous closure devices is reasonable for these patients. In the event of a large femoral hematoma, drainage rather than waiting for the hematoma resorption will maintain better blood supply and decrease the risk of infection.

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